

REMARKS/ARGUMENTS

Claims 85-167 are present in this application. By this Amendment, claims 1-31, 33-38, 41-80, 83 and 84 have been canceled, and claims 85-167 have been added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

The Office Action objects to the claims due to incorrect numbering. In view of this objection, all previously-pending claims have been canceled, and new claims 85-167 have been added. Applicants note that if only the claims that were purportedly improperly numbered were canceled and re-introduced as new claims, the new claims would similarly be separated from the independent claims from which they depend. As such, in order to overcome this objection, the claims have been re-numbered according to the Examiner's requirement. For the Examiner's convenience, Applicants note that claims 11, 16, 17, 19-28 and 72-74, which were withdrawn from further consideration, have been re-numbered as claims 97, 100, 101, 103, 105-113 and 158-160. Withdrawal of the objection is requested.

Claims 1-10, 12-15, 18, 29-31, 33-38, 41-71, 75-80, 83 and 84 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 6,219,974 to Hoberman. As this rejection may be applied to the new claims, this rejection is respectfully traversed.

An important feature of the invention is the ability for a single configuration of a sheet (for example, the sheet of Fig. 1 in the present application) to be smoothly conformed around a variety of complex shapes. For example, Fig. 8 shows the sheet being conformed around a cylindrical shape, and Fig. 9 shows the sheet being conformed around a hemispherical shape. Fig. 28 shows the sheet being conformed in the complicated shape of a spinal brace. An advantage of the invention is that the sheet may be conformed around any one of a variety of complex shapes without the need to remove or add modules from the sheet. This functionality is

obtained by virtue of the fact that the sheet is capable of changing density at localized positions. In other words, the modules are independent such that only a part of the sheet may have its density changed.

Page 1, lines 20-25 in the specification describes the disadvantage of the prior art structures wherein it is not possible to mold the prior art sheets around complex shapes without removing or adding modules in order to change the density of the sheet at localized positions. As explained in the specification at page 4, lines 6-24, the density of the sheet according to described embodiments may be changed in a localized area. In other words, the effective density of only a part of the sheet can be varied. This enables the sheet to be conformed around so-called “complex shapes” (which are defined at page 1, lines 22-23 as shapes involving compound curves that curve in two directions at the same time).

It is at least this feature of the invention that is lacking in the references of record. In an effort to clarify this feature in the claims, each of the independent claims has been amended to recite that a density of selectable portions of the sheet is variable so that the sheet may be smoothly molded around complex shapes. Support for this subject matter can be found in the specification at, for example, page 4, lines 4-24.

The Hoberman patent discloses a “mechanism” where every embodiment includes so-called “link-pairs.” An example is shown in Figs. 1-3 of two identical triangular shapes connected together by a pivot point 2. In Figs. 4-6, six of these link-pairs are attached together to form a loop. The shape can transform from the shape shown in Fig. 4 to the shape shown in Fig. 6. Fig. 5 shows an intermediate shape between the two extremes. The link-pairs in the sheet are inextricably linked to one another such that even when one (and only one) link-pair is held and a small rotation is applied between the two polygon links of the link-pair, this small rotation

is transmitted to every other link-pair in the sheet. That is, when the small rotation is applied, every link-pair in the sheet rotates by the same small rotation. Accordingly, the whole sheet can be made to expand and contract simply by applying a relative rotation between any two link-pairs.

As a consequence of this construction, localized density changes are impossible. Hoberman rather only discloses density changes that are constant throughout the whole sheet. That is, either the whole sheet expands, or the whole sheet contracts. It is not possible for one part of the sheet to expand while another contracts; nor is it possible for one part of the sheet to remain at constant density while another part expands or contracts. Consequently, the sheet in Hoberman cannot be smoothly molded around complex shapes.

Applicants thus respectfully submit that Hoberman does not anticipate the independent claims. Moreover, Applicants submit that the dependent claims are allowable at least by virtue of their dependency on an allowable independent claim.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-10, 12-15, 18, 29-31, 33-38, 41-71, 75-80, 83 and 84 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 6,425,703 to McDonnell. As this rejection may be applied to the new claims, this rejection is respectfully traversed.

McDonnell discloses a plurality of writing devices that can connect together. The writing devices include fixed ball and socket portions that facilitate pivoting and rotating between markers. The McDonnell structure is entirely incapable of conforming to complex shapes. The rigid connections between ball and socket members as well as the size and configuration of the connected writing element are structurally incapable of meeting the features of the claimed invention. Additionally, as noted above, the independent claims have been amended to recite

that a density of selectable portions of the sheet is variable so that the sheet may be smoothly molded around complex shapes. No such selectable portions exist in the McDonnell construction, and Applicants respectfully submit that at least the independent claims are distinguishable from McDonnell.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

Withdrawal of the rejection is requested.

Claims 1-10, 12-15, 18, 29-31, 33-38, 41-71, 75-80, 83 and 84 were rejected under 35 U.S.C. §103(a) over U.S. Published Patent Application No. 2002/0112413 to Hoberman in view of McDonnell. As this rejection may be applied to the new claims, this rejection is respectfully traversed.

Like the Hoberman patent, the Hoberman publication discloses a linked mechanism whereby any movement in one part of the structure is transmitted to all other parts of the structure. As a consequence, any density changes are applied across the whole area of the sheet. Localized changes in density are impossible for the same reasons as discussed above with the Hoberman patent. The McDonnell patent does not correct this deficiency. Even assuming the Hoberman structure could be modified to include the ball and socket links disclosed in McDonnell, neither Hoberman nor McDonnell provides even a remote suggestion to modify the Hoberman structure such that a density of selectable portions of the sheet is variable so that the sheet may be smoothly molded around complex shapes. Since this subject matter is included in each of the independent claims, Applicants submit that the claims are distinguishable from the Hoberman and McDonnell combination.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

Withdrawal of the rejection is requested.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to Deposit Account No. 14-1140.

Respectfully submitted,

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